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Regulation and Economic Performance: Literature Review

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Abstract: *Regulations and institutional factors can determine economic performance by influencing the efficiency with which the product and labour markets operate. This paper reviews the main theoretical channels by which regulation can have an impact on economic outcomes, such as productivity, investment, innovation and employment, and examine some of the empirical relationships found in the literature. The paper highlights evidence that points to positive effects that de-regulation of the product markets have on performance, , focusing especially on the indirect effects associated with de-regulation of key services sectors. Special attention is paid to two services sectors widely sheltered from competition forces, namely professional services and the financial sector. The paper also discusses aspects of labour market regulation. It concludes that the channels underpinning associations between regulation and performance in service sectors remain largely unexplored and further empirical work is needed.*

Keywords: product market regulation, labour market regulation, reforms, productivity, innovation, investment, professional services, financial sector

JEL classification: N10, O4, L5, L16, J5

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1. Introduction

Traditionally the regulation of markets has had a variety of motivations, some economic others more politic. While certain regulatory provisions aim to address public interest and concerns about market failures, such as monopoly conditions, externalities and asymmetric information problems, others serve key social objectives such as health and safety and the environment. Labour regulation in particular sets floors under wages and working conditions.

Regulation can be flawed and can distort firm and market behaviour, and does not always result in a more efficient or desirable allocation of resources. It is thus recognised that regulation can have negative as well as positive effects on economic performance (BERR, 2008) and that the negative effects can be of a direct or an indirect nature (Crafts 2006, Economy Review 2004). It is said that regulation leads to “government failures” when the costs exceed the benefits.

The direct negative effects of regulation are associated with the diversion of resources towards compliance and away from the creation of productive output; regulation is often seen as a tool to create rents for bureaucrats or incumbent firms with the state often holding direct or indirect control of the service providers¹. The indirect channels involve those regulations creating entry barriers, and altering wider incentives to invest, innovate or accumulate human capital; it is widely considered that product market regulations affect the market structure of an economy.

During the last decades many countries have implemented significant regulatory reforms of their product markets; they have reformed key network sectors, reduced administrative burdens and barriers to start-up, and have further opened domestic markets. With regards to labour market there has been a tendency to reduce stringency of employment protection legislation (EPL) thus making it easier to hire and fire workers. Despite this, the heterogeneity in the levels of product and labour market regulations and in the pace of the reforms remains substantial, and regulation is increasingly considered to be a major factor in explaining differences in aggregate performance across countries (Nicoletti and Scarpetta, 2003); an increasing number of studies in the literature investigate empirically the extent to which cross-country differences in key economic outcomes are related to policies and institutions that shape the business environment.

The focus of this literature review is on quantifying the extent to which anti-competitive regulation² in services sectors, as opposed to regulations in the public interest (e.g. by addressing market failures) has an effect on economic performance. For the services sector, several economic studies have previously investigated the relationship between institutional settings and economic performance, usually focusing on the impact on the growth of employment³, value added⁴ and productivity⁵. Factors other than the regulation influencing multifactor productivity in services have been investigated and these include R&D and innovation, ICT use, and labour force qualifications.⁶ See Nicoletti (2001) for a review of developments in the services sectors.

We will also discuss measurement issues of such regulation, and its consequences for employment and productivity. Of particular interest will be the extent to which indicators of regulation can be adapted to analyse employment and productivity in services sector (rather than whole economy).

¹Scherer and Ross (1990) highlight several sources of waste associated to public industries: “Companies spend substantial sums attempting to use political and regulatory processes to erect artificial barriers, impose other limitations to competition and defend themselves when their conduct is considered breach anti-trust laws”

² See Conway and Nicoletti (2006).

³ See D’Agostino (2006), Graf et al (2008), Messina (2005).

⁴ See Badinger and Breuss (2006).

⁵ See Nicoletti and Scarpetta (2003), Arnold et al (2008).

⁶ See e.g. Kegels et al (2008).

For brevity, we will skirt the debate about the “legal origin” causes of regulation⁷. While this debate is another approach to examining the efficiency of regulation, we will concentrate on direct analysis of regulation’s effects, again with emphasis on services.

2. Theoretical Channels

2.1 Product Market Regulation

2.1.1 Productivity and Innovation

Theory suggests that the reform of product markets could enhance productivity through three main different channels (Nicodeme and Sauner-Leroy 2007, Griffith and Harrison 2004): a) through the process of reallocation of resources - allocative efficiency -; b) through the improvement on the production factors -productive efficiency, and/or c) through the incentive for firms to innovate – dynamic efficiency -.

Allocative efficiency

Reforming product markets could enhance productivity by facilitating the reallocation of capital and labour to the production of the goods that the consumers value more, thus enabling a more efficient allocation of resources; this type of gain is known as “allocative efficiency”. The types of restructuring that can lead to increases in productivity can be of two types: internal and external (Criscuolo et al, 2004). While internal restructuring usually refers to changes in existing firms, external restructuring refers to the market selection mechanism by which less competitive firms exit the market and market shares are reallocated from lower to higher productivity firms. An important area of reform has been to make easier for firms to enter and exit a market. This has been driven by the governments in pursuit of growth through the Schumpeterian process of creative destruction, which stresses the importance of entry and exit, as failing firms are replaced by new innovative firms. Some product market regulations may reduce the number of firms prevailing in a market and provide firms with market power. These types of regulations often take the form of administrative procedures, and introduce barriers to entrepreneurship by making it difficult to set up new firms and create new jobs. They are more likely to affect small and medium-sized enterprises, which have been regarded in the literature as the key drivers of competition, growth and job creation.

Productive efficiency

Product market reforms are also likely to have an impact on the productive efficiency in the economy. This type of efficiency is related to the improvement in the utilisation of factors of production by firms, meaning that firms move closer to the technological frontier. Product market deregulation increases competitive pressures among incumbents, raising the elasticity of product demand; this increase in consumer price sensitivity will tend to drive less productive firms out of business. Greater competition may thus increase the incentives to reduce X-inefficiency, organise work more efficiently, and foster the introduction of new and/or better production processes.

In the principal-agent literature with asymmetric information it is argued that in competitive markets there are more incentives to reduce slack in managers and workers than in those markets less exposed to competition⁸. In firms subject to agency problems, productive efficiency may increase as a result of product market reforms because firms try to cut costs to prevent loss of market share when there exists threat of entry of new competitors (Hart 1983). Aghion, Dewatripont and Rey (1999) argue that by reducing the amount of slack in a manager, competition acts as a disciplinary device which enhances technological adoption and growth. If competition reduces the

⁷ on the one side, see Glaeser and Shleifer (2002), on the other Deakin et al (2007)

⁸ In the Wealth of Nations by Adam Smith. “Monopoly is a great enemy to good management”

agency problem decentralization is more likely. Acemoglu et al (2007) formulate theoretical predictions by which young firms and firms dealing with new (frontier) technologies are the ones most likely to choose decentralization.

Instead, in imperfect competition, managers can reduce their efforts without the same risk of going out of business. Haskel and Sanchis (1995) find that workers' effort is higher in the private sector than in the public sector. Private sector firms are only concerned with profits so insist on a high level of effort, whereas public sector firms are assumed to have broader social objectives and allow lower levels of effort.

Dynamic efficiency

Increased product market competition is considered to also increase the dynamic efficiency in an economy, by providing incentives for businesses to innovate and adapt, activities that are considered a crucial determinant of competitiveness and growth in the long run. In early industrial organisational models however, competition is considered detrimental for productivity growth because it reduces the monopoly rents that reward new innovations. In endogenous growth models where new innovation can only be made by entering firms, such as Aghion and Howitt (1998) and Aghion and Howitt (1992), patents protect monopoly rents from innovation and increased product market competition destroys these rents. In other endogenous models such as Barro and Sala-i-Martin (1995), Klette and Griliches (2000) and Aghion et al (2005a) incumbents are allowed to innovate but entry is fixed. In Aghion et al (2005b) it is the threat of entry that encourages innovation by incumbents. In these models, monopolists may innovate more than entrants in response to an increase in competition because of the reduction in total industry profits that the incumbent could suffer due to entry⁹. This is known as the "escape competition" (or rent dissipation) effect.

Another stream of models argue that monopolists have less incentive to innovate, (e.g. invest in R&D) than a firm in a competitive market due to the so-called "replacement effect" (Tirole 1988). A firm with monopoly position in a market has a flow of profits that it enjoys even if no innovation takes place; while the monopolist can increase its profits by innovating, it can also lose profits from ceasing to use the old technology. If a firm in a competitive market can reap the same benefit from innovating as the monopolist its differential return is higher because it does not have monopoly profits to be replaced by the innovation (Arrow 1962).

In order to reconcile predictions of different models it is crucial to understand the interplay between levels of competition, changes in competitive conditions and innovative behaviour, arguing that a variety of forces may be at work¹⁰. Aghion et al (2005a) show that the relationship between the intensity of competition and innovation may be non-linear, in particular, of an inverted-U shape. For low initial levels of competition the "escape competition" effect mentioned above tends to dominate. When there is not much competition in a market, an increase in competition may increase the incremental profits from innovating and thereby encourage innovation activities such as R&D investments aimed at "escaping competition". They demonstrate that the Schumpeterian effect or "replacement effect" tends to dominate for higher levels of competition.

In this setting, the incentives are likely to depend not so much on the post-innovation rents but on the difference between post-innovation and pre-innovation rents. More product market competition

⁹ Schumpeter's works not only emphasize the role of creative destruction for economic growth, but also stresses the importance of large incumbent firms in innovation (Schumpeter 1942). Acemoglu and Cao (2010) show that the two ideas are not contradictory and provide a theoretical framework where innovation can be simultaneously undertaken by new firms and by existing establishments.

¹⁰ Vives (2008) provides a theoretical framework to analyse the effects of competition on process and product innovation on a variety of market structures and modes of competition.

may foster innovations and growth because it may reduce a firm's pre-innovation rents by more than it reduces its post-innovation rents. In reality, the effects of product market competition on innovation can be diverse, depending on factors such as the technological characteristics of the industries, or the distance of a country to the technological frontier. Productivity growth depends on the potential to catch up and the ability to innovate, with the latter being more important the closer a country or a firm is from the technological frontier. It is particularly in "neck-and-neck" sectors, where firms are technologically more similar, where increased competition will foster innovation in order to "escape competition". With regards to the overall effect in the economy, the higher the average proportion of neck-and-neck industries in the economy the stronger the "escape competition" effect on average growth and therefore the steeper the positive part of the inverted-U relationship between product market competition and innovation.

2.1.2 Investment and Human Capital

One of the channels by which regulation can indirectly affect productivity is through capital investment. Regulation can have effects on the incentives of firms to upgrade capital stock and adopt new technologies to reach frontier production techniques. Regulation influences the cost that existing firms face when expanding their capital stock, deviating resources from productive uses such as the capital accumulation (see Alesina et al, 2005). Regulation may also impose a ceiling on rates of return of capital and this may affect the demand of capital relative to labour (Blanchard and Giavazzi 2003). In principle, the effects that regulatory reform in product markets can have on overall capital formation are uncertain (Faini et al, 2006). If regulatory reform involves changes in ownership structure it may have an effect on investment. For example, deregulation initiatives such as privatisation of public enterprises may decrease overall investment given the significant amount of investment undertaken by the public sector .

Investment in intangible factors has increased considerably in recent years, leading to higher productivity growth. The literature envisages an impact of product market deregulation on the accumulation of human capital. As in the case of innovation behaviour theoretical models yield ambiguous predictions on the sign of this relationship. Bassanini and Brunello (2010) argue that on one hand deregulation of markets reduces the amount of rents that can be appropriated by firms undertaking training. On the other hand deregulation encourages entry and thereby raises output and profit gains from training and improving investment incentives. This is equivalent to the "escape competition" effect highlighted in the innovation literature.

2.1.3 Trade

Trade has been regarded as an important sectoral growth driver (EC 2008). It is widely recognised that the most important impediments to trade in services are behind-the border regulations. The theoretical literature indicates that lowering barriers to the inward flow of goods and services will increase the degree of competition and thus lead to reductions in the mark-up. Melitz and Ottaviano (2008) show that larger markets exhibit tougher competition resulting in lower average mark-ups and higher aggregate productivity. Influential work by Melitz (2003) demonstrates how trade-induced reallocations towards more efficient firms should explain why trade may generate aggregate productivity gains without necessarily improving productive efficiency of individual firms; this can be attributed to the fact that firms will self-select into export markets, with the most productive firms within the sector the ones that become exporters.

2.1.4 Employment

Product market regulations that hinder competition can have important effects on labour market performance. In imperfectly competitive markets firms restrict output and employment; hence an

increase in competition in the product markets should bring prices closer to marginal costs, raising the output demanded by the consumers and the labour demanded by the producers.

In Blanchard and Giavazzi (2003)'s influential theoretical paper, easing anti-competitive regulations lead to employment gains, at least in the medium to long-run. In their model deregulation is defined as a process of reduction and redistribution of rents with dynamics of adjustment. By lowering the price of goods, deregulation in the product market raises the real wage and by reducing barriers to entry to new firms leads to an increase in output and a fall in unemployment. In the short run however, incumbent firms may shrink, increasing the risk of unemployment for currently employed workers, even if overall unemployment eventually falls. The size of the employment effects will depend on the features of labour market institutions and on the type of product market reform implemented. For a summary of other channels by which deregulation of product markets can have an effect on employment outcomes see the theoretical discussions in Nicoletti and Scarpetta (2005) and OECD (2002). Given the ambiguity between possible short and long run effects, empirical analysis should shed some light on the theoretical predictions.

3.1 Labour Market Regulation

Labour market regulation is designed to raise minimum wages (either via direct minimum wage laws or via extended collective agreements) and improve working conditions. Consequently it will affect job opportunities, including long-term unemployment, wage differentials and labour productivity. Labour regulation is multi-dimensioned but evidence shows that countries that are strict on one dimension tend to be strict on others. We set out the various dimensions of labour regulation and what theory says about the likely impact on economic performance.

First, labour market regulation sets a floor under wages via minimum wage laws, laws extending collective agreements, and unemployment, sickness and retirement benefits. Under this heading we might also put trade union regulation, that is, laws supporting trade unions and strike action since trade unions negotiate agreements, monitor wages, and in some cases administer unemployment and other benefits. A further aspect is laws encouraging "social partners" to reach agreements on labour matters: such laws encourage centralisation and coordination of collective bargaining which has been found to be an important part of labour regulation.

Second, there are the floors under working conditions. There are many areas here: working hours limitation, anti-discrimination laws for gender/age/disability and part-time vs. full-time or temp. vs. perm., worker participation laws (for example, requiring elected works councils), employment protection laws (EPL) restricting the firm's right to dismiss, transfer of undertaking laws designed to preserve wages and conditions when businesses are bought and sold, and health and safety laws. With regards to labour market regulation it is important to distinguish between rules which simply add to labour costs (such as mandatory sick pay) and rules which raise the cost of employment adjustment (such as employment protection legislation).

According to a first strand of the literature, employment security is considered important because productivity improvements depend on participation of workers, which would be undermined if employees think that they are at risk of losing the job. Under these conditions, easing the conditions to hire and fire may reduce the workers' motivation and commitment and delay the introduction of labour saving technological progress, thus lowering productivity. The role of employment laws also relates to the issue of adverse selection. Distinguished economists such as Lawrence Summers (1989) have pointed out that adverse selection can prevent negotiation of job security provisions

since these have an insurance-like nature, and asymmetric information prevents the firm from screening out the bad risks (lazy workers). If a single firm has strong employment security, it will attract less capable workers that will be very difficult to be laid-off. But adverse selection is not a convincing practical reason, firstly, because EPL and unemployment benefits are not negatively related. Countries with high benefits also tend to have high EPL; the correlation across OECD countries is 0.16 (Bassanini and Duval, 2006), and across Botero et al's (2004) larger set of countries is 0.32 (Siebert, 2007, Figure 4). Secondly, because since EPL does not appear really to act to increase job security, and it can be argued that EPL just helps a group of "insiders". As Saint-Paul (2002) argues, insider groups bring about and maintain EPL to protect rents. This line of reasoning is supported by Aghion et al's (2010) recent paper which shows that regulation is more likely in countries with low levels of trust as measured in the World Values Survey (e.g., with questions like "Would you say most people can be trusted?"). Beliefs and institutions "co-evolve", they say (2010, 0146). (For more on the determinants of trust, see Tabellini, 2010, also Glaeser and Shleifer, 2002). The end result is a "low trust, heavy regulation and low output" equilibrium. Of course, more needs to be done to test this argument, which is where work on service industries labour regulation should offer new insights into this issue.

EPL attracts particular interest, because it confers the valuable right of job security, while at the same time striking at the heart of labour adjustment and reallocation. Nickell and Layard (1999) argue that the role of employment protection and minimum wages is overemphasised in the literature. They argue that key labour market institutions on which policy should focus are unions and social security systems; encouraging product market competition is also regarded a key policy to eliminate the negative effects of unions. A similar conclusion is provided by Layard et al (1991) in their famous work on unemployment; they argue that it is bargaining coordination (corporatism) rather than centralisation which is important, though it is controversially hard to define. The coordination/corporatism variable has been used to show (Nickell, 1997) that the bad effects of unions for jobs are nullified if unions and employers can coordinate their bargaining. (On the other hand, Summers et al (1993), have pointed out the "striking" correlation between corporatism and heavy taxation – and taxation is bad for jobs¹¹). Still, the conclusion has to be that both wage and working conditions regulation have many dimensions – and interact with the tax-benefit system since higher unemployment benefits for example also act as a wage floor –, all of which need to be considered. For social security the key policies are benefit reform linked to active labour market policies aimed to move people from welfare to work. It is thus important to distinguish between good working conditions (and wages) that are negotiated and those that are mandated. Agell (1999) argues that "reforms that fail to distinguish between good and bad rigidities will do more harm than good".

3.1.1 Employment

Theoretical models highlight several factors as determinants of long-run employment rates. These include the levels of real demand of an economy - monetary policy instruments can also move demand and employment towards equilibrium levels consistent with inflation - , the ability to match individuals to available job vacancies etc (Nickell et al, 2005). However the key issue for unemployment is whether or not wages adjust to offset the extra labour costs associated with many existing labour market regulations and institutions.

Despite efficiency considerations, if regulation increases unemployment, its efficiency is automatically called into question. Siebert (2007) argues that if employment increases, we have efficiency in the sense that the gains of the gainers will be greater than the losses of the losers, if any

¹¹ see also Bassanini and Duval (2006, 35) on this correlation

– that is, a (potential) Pareto improvement. If it decreases, however, the gains of the gainers will be less than the losses of the losers.

It is necessary to consider the long-term unemployment rate as well as the overall rate when analysing labour regulation's effects. From the very beginning, with Nickell's (1982) work, it has been noted that EPL will have countervailing effects on inflows and outflows into and out of unemployment, leaving the outcome for the overall unemployment rate ambiguous. However, this research has made a homogeneous labour assumption, and the picture becomes different with disaggregation because wages and working conditions floors should impact most on the least productive. In other words, employers are likely to spend more on recruiting and emphasise education (see Daniel and Siebert, 2005), and also avoid workers at the two ends of the age distribution, thereby pushing up unemployment for the young and early retirement for the old. Thus, with heterogeneous labour, a composition effect resulting from labour regulation could clearly be strong. Whether this composition effect will be stronger or weaker in services (typically high turnover, and thus perhaps needing the flexibility which regulation restricts) is a matter for further research.

3.1.2 Productivity and Innovation

According to theory, the impact that employment protection legislation has on productivity is ambiguous. Early labour economics literature emphasized the beneficial effects that employment protection legislation (through an effect on tenure) has on worker motivation, training, wages and productivity. It is claimed that labour market regulations can remedy market failures and improve efficiency; under certain conditions, institutional features such as unions, minimum wages and unemployment benefits may promote a more efficient resource allocation (Agell, 1999). However restrictions on hiring and firing increases costs for firms of adjusting the workforce and therefore hinder reallocation of resources in activities likely to require adjustment such as investment in new technologies. The endogenous growth literature highlights that the most important mechanisms by which labour market institutions could affect productivity growth is via human and capital physical accumulation, innovation and entry and exit of firms (Barro, Sala i Marti 1995).

The inelastic adjustment of wages and employment to economic shocks is considered a detrimental factor for productivity and employment. Labour market regulation may hinder the ability of firms to find the best mix of technology and organisational structure given uncertainty associated to innovative investments (Bartelsman et al, 2003). Employment protection laws slow down the reallocation from old and declining sectors to new and dynamic sectors therefore reducing the growth rate of productivity. While the theory suggests both beneficial and detrimental effects associated with labour market institutions, the costs of maintaining those institutions that hinder labour market flexibility may be rising with globalisation.

We aim to identify outward shifts of the labour demand curve, rather than movements up or down it caused by the composition effect. A confusing picture of the effects of labour regulation on labour productivity can thus emerge from the fact that per hour and output per capita can move quite differently depending, for example, upon the course of hours worked (Storm and Naastepad 2009; Kilicaslan and Taymaz 2008). It is quite possible for labour productivity to move in an opposite direction to employment if the regulation cuts the least skilled out of work (Dew-Becker and Gordon, 2008), so that the remainder of the labour forces is composed of higher productivity individuals – the “composition” effect. Evidence (OECD, 2007) suggests that the composition effect is very real. To capture true productivity increases – outwards shifting of the labour demand curve – we must consider total factor productivity.

The effects of restrictions on hiring and firing workers on innovation and productivity are likely to be influenced by the characteristics of the industrial relation regimes. Labour market regulation can increase workers' bargaining power; if workers are capable of appropriating a higher share of the rents resulting from innovation and productivity improvements, regulation reduces the incentives to innovate. In decentralized wage-bargaining regimes, incentives to innovate and adopt new technologies depend significantly on workers' bargaining power. When bargaining occurs at the national level, a firm's incentive to undertake innovative investment does not depend on the bargaining power of its own workers.

Scarpetta and Tressel (2004) argue that the potential effects of bargaining regimes and EPL on the incentives to innovate and adopt new technologies may also depend on the technological characteristics of the sector in which firms operate. In low-tech industries high firing costs are likely to lead to higher adjustment costs, with possible negative effects on innovation and adoption.

3.1.3 Investment and Human Capital

For productivity growth too many rules and regulations may hamper innovative investment (Nickell and Layard 1999). Traditional growth models have assumed that labour market rigidities reduce the equilibrium level of employment, and this decrease the marginal product of capital and the incentives to save and invest, *ceteris paribus*. Regulations that raise the cost of adjusting factor inputs, including labour, are likely to reduce the expected returns on innovation or investment aimed at adopting new technologies with negative effects on long-term growth.

It has been argued that labour market institutions – unions, minimum wages' laws, unemployment insurance- narrow wage distributions, and that this wage compression may reduce the incentives to accumulate human capital. Nevertheless, Agell (1999) points out to theoretical work showing that there are losses when market forces create excessive wage differentials and potential gains from institutions that promote a rigid and compressed wage structure. Acemoglu and Pischke (1998) present a theoretical model where firms may want to invest in the general skills of their employees. Their model is based on a centralized or sectoral wage bargaining system where wages are compressed, and firms despite finding it more difficult to attract high skilled workers on the external market, gain from training their own workers.

3.1.4 International Trade

Helpman and Itskhoki (2009) construct a theoretical model that explains how rigidities in labor markets impact trade. They show that rigidities in labour markets, in particular employment protection legislation reduce operating profits which lead to lower competitiveness of the firms. As a result firms are discouraged from exporting. It has also been noted that there appears to be a positive correlation between exposure to international trade and the scope of collective bargaining and centralisation of wage bargaining; It is also noted that more open economies are likely to have minimum wages, strict job security legislation and generous unemployment benefits (Agell 1999). The popular argument (e.g., Agell, 1999) is that trade openness increases people's demand for labour regulation, which is therefore an efficient response to the risks of trade. Despite the variety of arguments, causality remains an empirical question.

4. Regulations: Dimensions and Measures

In this section we outline measurement efforts on product and labour market regulation. In order to assess the influence of product market regulation on the business environment, most empirical studies attempt to measure the degree of competition prevailing in a market, focusing either on direct observed measures (at macro, industry level or firm level) or on external or proxy measures of regulation.

In the past the most commonly used measure of competition has been the price-cost margin¹², or mark-up, to reflect the ability of a firm to set prices above marginal costs as it is expected from economic theory in perfectly functioning markets. Methodologically, estimates from mark-ups have mostly been obtained using the econometric framework of Hall (1988) or Roeger (1995), though the drawbacks of those methods have been outlined in the literature recently¹³. This led to the development of theoretically and empirically more robust measures, such as profit elasticity¹⁴. However, as firm-level data is required to compute this measure, it has only rarely been used in empirical analysis so far. Structural indicators such as the degree of industry concentration have also been traditionally employed to assess the degree of market power and evaluate the links to economic performance at industry level. Other works have used measures of rents or the Lerner Index (Nickell 1996) which are considered more advantageous measures than market shares, Herfindahl or concentration ratios.

In recent years the degree of product market competition has been assessed by means of proxy measures such as the OECD Product Market Regulation Indicators at country level (Wölfl et al, 2009) or indicators such as the OECD indicators of Non-Manufacturing regulation (NMR indicators, see Conway and Nicoletti 2006) or the Regulation Impact indicators at industry level (Conway et al 2006). These indicators aim to quantify a country's (anti-competitive) regulatory burden and were developed to overcome problems of traditional indicators on the intensity of competition (e.g. measures of market power), such as their endogeneity. The NMR indicators include indicators of regulation in key service sectors such as transport, energy and communications, where regulatory changes have been especially important (ECTR indicators). The Regulation Impact, or "knock on", indicators aim to capture the extent to which regulation in non-manufacturing sectors has widespread consequences in other sectors of the economy. These type of indicators are increasingly employed in empirical research due to their suitability for panel data analysis.

The search for better indices measuring labour market regulation is on-going. A time-varying indicator of labour regulation, particularly EPL, is of major importance. Both the Fraser Institute's Economic Freedom of the World index (Gwartney, 2010) and the Heritage Foundation's Index of Economic Freedom (Heritage, 2010) have labour regulation components. All these sources provide a time varying indicator of labour regulation which can be used more intensively in future research (but only for the last 10 years or so). Blanchard and Wolfers (2000) have produced a time-varying index of EPL by linking Lazear's (1990) index with the OECD's index, and interpolating for missing years. A much longer time series, 1950-2003 has been produced by Allard (2005) using the OECD-World Bank leximetric method of scoring labour legislation.

¹² Another common measure to assess competition is the Herfindahl index, a measure of sectoral concentration of firms. However, both the mark-up and the Herfindahl and the price-cost margin suffer from severe theoretical drawbacks (see Tirole, 1988).

¹³ See Hylleberg and Jørgensen (1998) and Dobrinsky (2004).

¹⁴ See Boone et al (2007).

5. Consequences: Empirical Evidence

5.1 Product Market Regulation

Despite suggestions in the literature of welfare gains associated to regulatory reform, the linkages between reforms and macroeconomic effects are not always clear, and empirical evidence is still scant. We investigate to what extent product market reforms, particularly those that affect the intensity of competitive pressures in the markets, have had a significant influence on economic outcomes such as investment, productivity and employment - ultimate determinants of GDP growth. We review evidence that considers developed and emerging economies¹⁵ and research making use of different methodologies such as general equilibrium and econometric techniques. Particular attention is paid to evidence regarding the services sectors. See Schiantarelli(2008) for an detailed review of evidence.

Estimates suggest that the GDP per capita levels in OECD countries could increase by around 2 to 5 percent if barriers to trade, investment and competition were reduced; with product market reforms that stimulate competition providing the largest part of the overall gains in GDP per capita (OECD 2005a). The largest role of product market reforms compared to tariff lowering is attributed to the high level of domestic product market regulation particularly in services sectors.

Bayoumi et al (2004) show that differences in competition can account for over half of the gap in GDP per capita between the Euro area and the US. They simulate greater competition in the euro area by lowering euro-area mark-ups in the model to the level of those in United States. They find that output could increase by 12.4 percent in the euro area as both investment and hours worked would rise markedly, and by 0.8 percent in the rest of the world through a favourable term of trade effect. This points to the existence of international spillovers derived of an increase in competition.

For transition economies Commander and Svejnar (2007) find that the effect of business environment on several dimensions of performance is rather weak, contrary to other empirical results. They conclude that while country effects explain differences in performance it is difficult to attribute these effects to differences in the business climate. Babetskii and Campos (2007) review 43 econometric studies that look at the effect of structural reforms on the GDP growth rate also for transition economies¹⁶. They show that only approximately one third of the studies find a positive role for reforms; the measurement of reform, the difficulty to controlling for the role of institutions and differences in the starting points are the main obstacles that enable to identify a positive effect.

Productivity

That competition is an important determinant of productivity is found generally in firm level studies. Research such as Nickell (1996) and Blundell et al (1995) report a positive correlation between competition -measured by the number of competitors in the same industry or by the inverse of a market share or profitability index- and productivity growth within a firm or industry. Bloom and van Reenen (2010) show that competitive product markets are associated with better management practices. Bloom, Sadun and Van Reenen (2009) find a robust positive association between product market competition and decentralization. Bloom, Sadun and Van Reenen find that Anglo-Saxon and Northern European firms are much more decentralized than those from Southern Europe and Asia and this decentralisation allow the most efficient firms to grow. Using firm level data from the World

¹⁵ An important source of information that covers developing countries and transition economies as is the World Bank "Doing Business" database

¹⁶ Empirical studies use the EBRD and World Bank liberalisation and reforms indices.

Bank Enterprise Survey Database, Ospina and Schiffbauer (2010) show that countries that implemented product market reforms experienced stronger increases in competition and in productivity; the contribution of the increased competition to productivity growth is estimated to be around 12 to 15 percent.

Griffith and Harrison (2004) find that regulatory reforms that have reduced the level of economic rents appear to be associated with lower levels of labour and total factor productivity, at both country and industry level. Loayza et al (2009a) look at the effect of regulation on the economic performance of a wide set of countries, including developing countries¹⁷; despite finding that both product market reform and trade reform have a positive and significant effect on productivity growth, they recognise that it may take time for the full effects to materialise. Loayza et al (2009b) find that the adverse effect of product market regulations is stronger on the components of productivity growth that reflect reallocation of resources between firms. Evidence points to the existence of large within-firm effects, but the within-firm component is found to make small contributions to MFP growth compared to labour productivity growth (Scarpetta et al, 2002).

Empirical studies often have not been able to identify the impact of product market regulations and reforms on allocative, productive and dynamic efficiency. The Economy Review 2004 presents in summary fashion the main empirical results found in the literature concerning the three types of efficiency gains. Recent studies attempt to estimate the importance of allocative efficiency gains. Following the decomposition of multifactor productivity in Olley and Pakes (1996), Arnold et al (2010) cross-sectionally decompose aggregate productivity gains into two terms: the average level of firm-level multi-factor productivity and the extent to which firms with greater efficiency have greater market share. They find a negative effect of the strictness of regulation on the allocative efficiency component of productivity, which originates mainly in the service sectors. Hsieh and Klenow (2009) provide quantitative evidence on the potential impact of resource misallocation on aggregate for Multi Factor Productivity (MFP) for China and India; they find that important productivity gains could be accrued if capital and labour were allocated to equalise their marginal products across plants within narrowly defined sectors to the observed in the US. Despite this, they show that market reforms have reduced allocative efficiency particularly in China.

Turning to dynamic effects several firm-level studies show that competition is likely to increase industry MFP mainly through the process of entry and exit (see Bartelsman and Doms 2000). All find a significant role for reallocation in both entry and exit of firms in the United States and Europe but most of studies concern the manufacturing sector. For a sample of UK manufacturing firms for period 1980-1992, Disney et al (2003) find that the entry of new firms contribute to the overall MFP growth because the new firms enter the market with a more efficient capital input mix and more advanced technologies. Criscuolo, Haskel and Martin (2004) estimate that entry and exit contributed to 50 percent of the overall productivity growth during the 90s in the UK. For the US entry of new establishments (plants) accounts for about 25% of average MFP growth at the industry level (Bartelsman and Doms 2000). Lentz and Mortensen (2008) find more significant role for entry. Foster, Haltiwanger and Syverson (2008) argue that the literature is likely to understate the productivity advantage of new producers and the contribution of entry to aggregate productivity growth. They show that entrants are more physically productive than incumbents but because young producers charge lower prices, revenue-based productivity measures tend to understate entrant's productivity advantages.

Poschke (2010) demonstrates that differences in entry costs explain to a large extent the observed differences in MFP between the US and other developed countries; the reduction in competition due to higher entry costs decreases the incentives to adopt more advanced technologies. In particular,

¹⁷ Using indicators from the World Bank, Heritage foundation and Fraser Institute.

he finds that small differences in administrative costs can explain around one third of differences in MFP. Barseghyan (2008) finds that an increase in entry costs by eighty percent of income per capita would reduce MFP by 22 percent. For Mexico Kaplan et al (2007) conclude that while it is important to reduce the number of procedures and time required for firms to be registered, other aspects that can have an influence on firm creation, such as the burden of taxes and the access to credit cannot be neglected.

Nicoletti and Scarpetta (2003) find evidence that regulatory reform in terms of privatisation and entry liberalisation had a positive influence on total factor productivity growth in certain services sectors for a number of OECD countries. Nicoletti and Scarpetta find evidence of a negative relationship between total factor productivity growth and three economy-wide measures of regulation with the correlation being largest with the indicators of administrative burdens (which represent a uniform barrier to entry for business in most industries). Inklaar et al (2008) find that entry liberalisation has been beneficial for productivity growth in telecommunications, while the evidence for other services industries is not so clear. Over the last years 10-15 years the UK has been a good performer in services sectors (telecoms, electricity and wholesale and retail trade) and part of this is attributed to the introduction of competition (Maher and Wise 2005).

While affecting all firms, strict regulations have particularly negative effects on firms in the most dynamic industries such as ICT industries (Conway et al, 2006, Nicoletti and Scarpetta, 2003). Nicoletti and Scarpetta (2003) find that product market regulation slows down catch-up productivity growth by hindering rapid reallocation of productive resources. In ICT industries, technological progress has been more rapid and there is greater potential to innovate and implement the latest technologies. This has been largely attributed to the fact that regulatory barriers to diffusion tend to be higher in these sectors compared to the rest of the economy. When there are rapid improvements in productivity the positive effects of pro-competitive regulations are amplified, increasing dispersion on productivity levels across countries with different regulatory regimes (Arnold et al, 2010). While affecting all types of firms, regulatory constraints are especially harmful for those with a significant gap with the technology leader. Structural and institutional factors may thus explain why ICT diffusion in Europe is still slow and its economic effects are hardly perceptible. Barrios and Burgelman (2007) show that the US was able to reap the benefits from ICT investment faster and to a greater extent than EU countries with similar specialisations in ICT-producing and ICT-using industries.

Several papers examine to what extent anti-competitive regulation in service sectors have an influence in other sectors of the economy; this is relevant given the increasing proportion of service inputs employed by manufacturing sector. Bourles et al (2010)¹⁸ find that excessive regulatory burden in key services sectors can curb productivity in downstream sectors. This result is stronger for observations closer to the technological frontier. Havik et al (2008) present similar evidence to explain productivity gap between European countries and the US, and Arnold et al (2008) provides similar conclusions for Czech firms. It has also been shown recently that the negative impact of restrictive regulation in upstream sectors on multifactor productivity performance is of a long-term nature, and affects especially the sectors using ICTs most intensively (EC 2009). Instead of using regulation proxies, Forlani (2010) evaluates the importance of the market structure of service sectors for French manufacturing firms; the results confirm a negative association between the level of concentration and mark-ups and the average productivity of downstream manufacturing firms.

¹⁸ Bourles et al (2010) construct indicators of regulatory burden for 20 sectors that use the outputs of non-manufacturing industries as intermediate inputs. In order to minimise endogeneity issues they use the 2000 US input-output tables.

Innovation

Blundell, Griffith and van Reenen (1999)¹⁹ use UK firm-level data to investigate why market dominance enables firms to be more innovative and shed light on the importance of the incentives to innovate. They find a positive correlation between market share and innovation and conclude that high market share firms have greater incentives to pre-emptively innovate (“escape competition” effect). However Blundell et al also show that less competitive industries (those with higher concentration levels and lower imports) had fewer aggregate innovations, even though the higher market share firms innovated most frequently. Despite the evidence for manufacturing there is little empirical support for the view that large firm size or high concentration is strongly associated with a higher level of innovative activity, at least at an aggregate level.

Marcos and Santalo (2010) find a strong negative association between regulation intensity and regional productivity and innovation in Spain. They do not find evidence at the regional level that the decrease in innovation and productivity is caused by lower product market competition. Instead they find that regulation has affected differently firms depending on their size; regulation has had a particularly detrimental effect in the largest establishments, which are traditionally the ones most likely to innovate.

Bassanini and Ernst (2002) look at the effect of regulation on innovation using the OECD indicators of regulation (rather than direct measures of competition) and measures of R&D intensity in a cross section of 18 OECD countries and 18 manufacturing industries. They report a negative association between R&D intensity and indicators of non-tariff barriers and inward-oriented economic regulation. Conversely, stronger protection of intellectual property rights tends to be positively associated with higher R&D intensity, although endogeneity problems do not allow them to identify this association as a causal relationship. Griffith et al (2006)²⁰ find that an increased product market competition measured by reduction is associated with increase in innovation intensity in manufacturing.

Several empirical studies assess whether there is a non-monotonic relationship between innovation and product market. Griffith and Harrison (2004) find that while there appears to be a non-linear relationship between the level of economic rents and levels of R&D expenditure and growth rates of labour and total factor productivity, in most countries a reduction in rents is associated with a reduction in R&D and growth rates. Using a semi-parametric approach, Aghion et al (2005a) show that an inverted-U relationship between competition and innovation measured as patent counts holds within several industries, and the inverted-U relationship between competition and growth is steeper for more neck-and-neck industries. Tingvell and Karpaty (2008) find that the inverted-U relation holds for both small and large service-sector firms in Sweden. Within services, Broersma and van Ark (2004) find evidence of an inverted U-shaped relation between competition and productivity growth only in retail trade and utility services. They use the price-cost average as an approximation of the price-cost margin, which measures industry concentration and hence competition.

Aghion et al (2009) demonstrate that the threat of technologically advanced entry encourages incumbent innovation and productivity growth in sectors that are initially close to the technological frontier, whereas it may discourage incumbents in sectors further behind the frontier. In line with these results, Brandt (2004) finds that high rates of firm entry leads to productivity growth in ICT related services sectors although in more mature manufacturing industries R&D seems to play a larger role. The implications of these results are relevant for policy making. Aghion et al (2009) argue that policies aiming at decreasing or removing product market barriers to entry alone may not

¹⁹ Blundell et al (1999) use UK firm level data and consider innovation counts as measures innovation output; the measures of competition include market shares, concentration and import penetration.

²⁰ Griffith et al (2006) exploit exogenous variation of implementation of EU Single Market Program to identify effects of reforms on performance.

be sufficient to foster growth of incumbent firms in all sectors of an economy. The results suggest the need for complementary labour and capital market institutions that facilitate the reallocation of factors and resources from less to more technologically developed sectors where incumbent firms respond more positively to higher entry threat.

Ahn (2002) offers a comprehensive review of empirical studies studying the links between competition, innovation and long run productivity. Empirical findings are ambiguous but the recent literature agrees in that that for a given level of protection of intellectual property rights, product market competition – in a broad sense - is beneficial for innovation in the long run²¹.

Investment and Human Capital

Griffith and Harrison (2004) conclude that regulatory reform that stimulates competition in a market is likely to increase factor demand; however this is only observed for the services sectors, but not in manufacturing. On industry-specific regulations, Alesina et al (2005) find evidence that liberalisation, particularly on barriers to entry, is likely to enhance investment in network industries such as post and telecommunications, using the use time varying sector-country specific measures of regulation collected by the OECD for the period 1975-1998. Other papers have investigated the effects of regulation on FDI (Nicoletti et al, 2003) and the presence of foreign affiliates (Conway et al, 2006). Nicoletti et al (2001) demonstrate that the influence of policies and institutions on growth operates to a large extent through the accumulation of physical and human capital.

To date there is little evidence on the impact of product market regulations on firm's innovative investment. Gust and Marquez (2004) find that a burdensome regulatory environment (both employment protection legislation and business regulations) affects negatively the adoption of information and communications technology²² and this helps explain the productivity slowdown observed in many developed countries during the 1990s. Conway et al (2006) look at the link between product market regulation and investment in information and communications technology at both aggregate level and industry level.). Arnold et al (2008) argue that the difference in the timing of the technological boom in ICT technologies and the regulatory reform process in Europe was a key factor hindering effective accumulation of ICT capital, in particular in services industries, where deregulation has been much slower to take place. At industry level recent evidence demonstrate that the relationship between stringency of the regulatory environment and ICT investment may be more important than for traditional types of investment (EC 2009).

Bassanini and Brunello (2010) use cross section data from the European Labour Force Survey to investigate empirically the relationship between product market regulation (OECD indicators) and training incidence in a sample of 15 European countries and 13 industrial sectors. They show that deregulation increases training since the "escape competition" effect prevails, in particular a 10 percent reduction of regulation increases training incidence in the exposed industries by 2.8 to 5 percent.

International Trade

There is a large amount of empirical research on trade liberalisation, and many studies show a positive relationship between openness and growth. Import penetration rate is sometimes used as a proxy for degree of foreign competition. Regulation in services may affect negatively the efficiency of manufacturing by discouraging inflows of foreign direct investment. Evidence indicates that presence of foreign affiliates is associated with higher levels of MFP (Haskel et al 2007). Nicoletti et

²¹ Ahn (2002) argues that the existence of short-run market power does not necessarily imply lack of competition particularly in dynamic industries such as ICTs.

²² Defined as office and computing equipment as well as radio, television and communication equipment.

al (2003) find that it is only when accompanied by appropriate domestic policies that trade openness facilitates competition, investment and productivity. Barrell and Pain (1997) finds that European integration had a substantial impact on the patterns and level of FDI within Europe, which was a key channel on the impact of competition on productivity.

Employment

Not much attention has been paid to cross-market effects, that is, to the influence of product market policies and regulations on the outcomes of the labour market and vice versa. Consistently with predictions in the model by Blanchard and Giavazzi (2003), Nicoletti and Scarpetta (2005) find that significant employment gains can be obtained by deregulating product markets in overly regulated countries. They look at the influence of product market reform in employment in 20 countries for the period 1980-2002 using the OECD proxies for developments in the regulation of seven non-manufacturing industries. Their findings show that regulations that curb competition and entry have had a negative impact that reduced significantly employment rates in OECD countries over the past three decades. After controlling for several policy and institutional factors in the labour market, anti-competitive product market regulations (such as barriers to entry in inherently competitive markets and restrictions in price competition) had a negative impact on the employment rates of the non-agricultural sector of the OECD countries (OECD 2002). Nicoletti et al (2001) estimate that the reduction of product market regulation from relatively high to relatively low levels would boost employment rates by around 2%.

Griffith and Harrison (2004) find that the association of greater competition and higher levels of employment holds particularly in the service sector. Pissarides (2001) finds a negative correlation between a measure of start-up costs and employment rates across a small sample of OECD countries but Ebell and Haefke (2003) estimate that no more than half a percentage point of European unemployment rate can be attributed to the regulation of entry. Messina (2003) finds that the interaction between product market regulations that raise barriers to entry with supply and demand forces help explain observed differences in service sectors' share of employment across countries in similar stages of economic development. Lopez-Garcia (2002) offers the similar conclusion. Those economies with unfriendly institutions to service job creation, such as higher start-up costs, were not able to have a smooth transition towards a service economy showing significantly lower service employment and higher unemployment.

The results support the theoretical finding that at least in the long-run, increasing competitive pressures should be a priori good for employment since stimulates labour demand; it can thus be a useful complement to labour market reforms in increasing labour utilisation; they also show that employment gains are likely to be higher in countries that have rigid labour markets. The literature offers different predictions at when the product market deregulation may be more effective. Nicoletti et al (2000) observe that regulatory environments in the product market tend to be associated with restrictive employment protection policies. Fiori et al (2007) and Nicoletti and Scarpetta (2005) present evidence that product market deregulation is more effective at the margin when labour market regulation is high. A possible reason for this is that when liberalisation occurs, employment increases in part through the expansion of activity and entry of new firms but also due to a reduction in the wage-productivity gap as insiders lose bargaining power and share of rents. When labour markets are more flexible the employment gains are only obtained through the first channel.

Recent evidence demonstrates that the size of the employment effects associated to product market deregulation may depend on the nature of the labour market institutions with Ebell and Hefke (2004) demonstrating that the relationship between product market competition and the degree of collective bargaining may in fact be endogenous. Using time-varying policy reforms to provide

exogenous variation in the product market conditions, Griffith et al (2007) show that the significant deregulation experienced by many OECD countries over the last twenty years was associated with increases in competition - measured by firms' profitability -, and increases in aggregate employment and wages. They also estimate that in countries with higher levels of collective bargaining and/or union density the increase in employment is likely to be larger and the increase in real wages smaller. The reason for this is that unions who care about employment as well as wages are constrained by the level of competition in the product market. The issue of complementarity is explored further in papers such as Berger and Danninger (2006) and Nicoletti et al (2001). De Macedo and Oliveira (2008) show the importance of policy complementarities to enhance growth in transition countries.

5.2 Labour Market Regulation

Here we consider employment/unemployment consequences of labour market regulation on which there is much research, and also productivity consequences which are conceptually more difficult to isolate (more employment can simply mean lower productivity, so it is necessary to analyse total factor productivity). Finally we will summarise ways forward for research on labour regulation effects on productivity in the services specifically.

Employment

Considering research results in the context of heterogeneous labour, it is worth considering Koeniger et al's (2007) research on wage differentials in 11 OECD countries 1973-99, using a time-varying measure of EPL (based on Blanchard and Wolfers 2000). After all, wage differentials only exist because labour is heterogeneous. They find that EPL strongly reduces wage differentials. This result is surprising because, since EPL bears most on the unskilled, their wage and thus wage differentials should rise with stricter EPL. The fact that the opposite happens implies that trade union power is using employment protection as a hold-up threat (Saint-Paul, 2002) to increase unskilled wages at the expense of unskilled unemployment.

Siebert (2007) gives a picture of how earnings compression may adversely affect job opportunities. We see especially how young men's employment/population ratio increases relative to prime age men as earnings differentials rise, with a correlation of 0.57. Older men (55+), and women appear to benefit, too. The implication is that we should look at marginal groups – unskilled labour markets, and unskilled labour-intensive industries – to really assess adverse employment effects. Taking overall employment and unemployment rates, comprehensive papers by Bassanini and Duval (2006) and Dew-Becker and Gordon (2008) consider effects of the main forms of labour market regulation. Union density, and benefit replacement rates have an adverse effect (as do taxes), but EPL as such is minor in this context. However, neither paper considers marginal groups.

Nickell and Layard (1999) do not find a significant effect from EPL on the total unemployment rate. However, when marginal groups are considered, EPL and strong unionism has more of an effect. In particular, for the over 55s, the research by Bertola, Blau and Kahn (2007) using a 17 country OECD dataset with a long time period 1960-96 finds strong adverse effects of union power for over 55s participation. They explain this result in terms of unions rationally pricing out of the labour market groups such as the old who have good non-employment alternatives such as (subsidised) early retirement. Interestingly (see Heywood and Seibert, 2009), there is no hint in their results of bargaining coordination reducing the adverse effects of union power. This research also finds adverse effects of EPL on older workers participation, as does that by Daniel and Siebert's (2005) study of matched plants (both these studies use variants of the Blanchard-Wolfers (2000) EPL index).

Backing up the EPL finding is research on the negative employment effects of age discrimination legislation, since such legislation (Lahey, 2008) acts as a form of EPL. Again, the implication is that we need to search for the marginal groups to test for the employment consequences of labour regulation.

We have seen it is necessary to get away from simple labour productivity, and analyse total factor productivity, which Bassanini et al (2009) show is likely to be reduced by EPL in industries with greater layoff propensity, and which are thus more affected by EPL. An alternative approach is to consider related variables such as the speed of employment adjustment which Caballero et al (2006) show is also reduced by EPL, once enforcement is taken into account. The Caballero et al (2006) finding is for a cross-section of countries using the Botero et al (2004) index of EPL, but their method could perhaps be extended to the industry level using the Bassanini et al (2009) technique, thereby providing a method for analysing regulatory effects on services vs. manufacturing labour adjustment.

A third possibility is to take enterprise formation/entrepreneurship, following Kannianinen and Vesala (2005) as the dependent variable. Kannianinen and Vesala (2005) use a cross-country dataset with the OECD (2004) type of EPL measure, and show that their measure of entrepreneurship (basically, self-employment) is robustly negatively affected by EPL. The way in which employment laws reduce formal sector employment in developing countries (Besley and Burgess, 2004, Djankov and Ramalho, 2009) is related. Again, this approach seems open to the use of industry data which would therefore supply a view on service sector effects.

Elmeskov et al (1998) review cross-country determinants of structural unemployment focusing on the role of labour market policies and certain institutional factors. The impact on the functioning of the labour market may depend upon the institutional framework within which they operate, and the interaction mechanisms are generally complex. Elmeskov et al find for the period 1983-1995 that different collective bargaining arrangements affect labour market outcomes. A high degree of co-ordination on employer and employee sides can significantly reduce structural unemployment insofar as such coordination provides a mechanism by which economy-wide labour market conditions can be internalised in the wage-setting process, increasing the sensitivity of real wages to shocks. The positive impact on aggregate unemployment is stronger and statistically significant in countries with an intermediate degree of centralisation/co-ordination - where sectoral wage bargaining predominates with limited co-ordination. These results are consistent with the hypothesis that when insiders have strong bargaining power, they may more resilient to employers' attempts to reflect higher payroll taxes and/or high turnover costs (due to strict EPL) in lower wages, even if this works to the detriment of outsiders.

Nickell et al (2005) estimate that labour market institutions explain around 55% of the rise in European unemployment from the 1960s to the first half of the 1990s, finding that the combination of benefits and taxes are responsible for two-thirds of the rise in European unemployment that institutions explain.

Productivity and Innovation

The excessive labour market regulation prevailing in many European countries has been linked to their slow labour productivity growth performance. According to the OECD work an excess of labour market regulation reduces productivity growth and technological progress (Elmeskov et al, 1998, Bassanini and Ernst, 2002, Scarpetta and Tressel, 2004).

In an econometric analysis based on data for 17 manufacturing industries in 18 OECD countries (1980-2000), Scarpetta and Tressel (2004) find evidence that high labour adjustment costs (proxied

by the strictness of employment protection legislation) can have a strong negative impact on productivity. As well as institutional factors affecting labour costs they consider traditional growth factors, including technological catch up, human capital and R&D. Different industrial relations regimes *per se* do not have a significant impact on productivity. However, differences in these regimes seem to affect significantly the estimated impact of EPL on multifactor productivity. In particular they find that when institutional settings do not allow wages or internal training to offset high hiring and firing costs, the latter reduce incentives for innovation and adoption of new technologies, and lead to lower productivity performance. This is the case when sectoral wage bargaining without coordination is predominant.

A limitation of these type of studies is that available data does not allow differentiation of these labour market indicators by industry. Further research should shed some light on the important of EPL for productivity in different industries. While labour regulation is by nature economy-wide, recent research (Bassanini et al, 2009) has investigated whether employment protection has particular adverse effects in industries with high labour redundancy rates such as manufacturing. This research angle can potentially be applied to the service sector.

Contrary to the above evidence Storm and Naastepad (2007, 2009) instead find that a more rigid labour market regulation (proxied by EPL and other characteristics of the industrial relations system) is associated with higher labour productivity growth. It is claimed that productivity gains depend largely on the cooperation of workers and their ideas in a setting where the workers have some degree of autonomy in decision making. This requires more training and it is only worth it if the employment relation is of long-term. This reasoning can also be found in Auer et al (2005) and Nickell and Layard (1999). Auer et al (2005) find a positive association between productivity growth and employment tenure.

The idea that the rigidity of labour markets is the cause for lower productivity performance is put into question. The impact of labour market deregulation on unemployment is also discussed, questioning the idea that the rigidity of labour markets is associated with higher unemployment. They argue that it is because labour market regulation simultaneously raises wage claims as well as productivity growth that its impact on production and unemployment is likely to be small or even insignificant.

A possible limitation of these papers is that they employ measures of labour productivity rather than measures of total factor productivity. Storm and Naastepad (2007) conclude the existence of a trade-off between productivity and employment growth: labour productivity growth is highest in those countries where employment growth is lowest and productivity growth is lowest where employment growth is highest. Storm and Naastepad (2009) compare the macroeconomic performance of three country groups according to their labour market regulation system (countries with a highly coordinated system that have high real wage growth, countries with highly coordinated system and low real wage growth, countries with liberal system and low real wage growth). Given the trade-off they find important differences in their productivity and employment patterns but GDP growth does not vary significantly between these groups.

Griffith and Macartney (2010) investigate empirically the relationship between EPL, and innovation activity across twelve European countries and they demonstrate that the nature of the innovation has a role to play. They find both positive and negative effects of EPL on innovation incentives for firms thus reconciling different theoretical predictions. Multinational firms do more incremental patenting activity in countries with high EPL and more radical patenting activity in countries with low EPL. This is because radical innovations, despite being potentially more profitable require larger employment adjustment than incremental innovations.

Investment and Human Capital

Recent evidence (EC 2009) demonstrates that those countries with higher EPL have less ICT investment (controlling for other factors) and that strict EPL hinders the translation of ICT into productivity gains. Gust and Marquez (2004) show that at aggregate level that a restrictive EPL may have hindered the adoption of ICT outside the US from the mid 1990s. The evidence regarding other institutional characteristics is rather mixed (EC 2009). Using an industry panel dataset for EU countries O'Mahony and Peng (2010) show that continuous training linked to ICT is a significant determinant of productivity growth. Peraita (2001) presents evidence on the impact of labour regulation on the incentives for firms to pay for the training in Spain, a country with high firing costs and a very centralised wage determination system (in which unions play a key role). He finds that high wage compression does not have an effect on the incentive for firms to invest in general training, showing that firm-sponsored training is very uneven and it is concentrated among the most skilled workers.

International trade

Recent evidence shows that stringent hiring laws distort exporting decision of firms. Using firm-level data from 26 countries in Eastern Europe and Central Asia, Seker (2010) shows that strict employment protection legislation discourages firms from exporting; higher cost of labour decreases operating profits and lead to a higher threshold of productivity required for entering export markets. It is also shown that more costly labour regulation affects the ability for firms to create jobs, a fact that can make firms reluctant to enter foreign markets.

Gross and Ryan (2008) analyse the role of EPL for regular and temporary employment on decisions by Japanese multinational enterprises on where to locate their FDI across otherwise similar economies within Western Europe. The conclusion is that EPL does have a negative effect on location decisions by Japanese firms and the negative effect comes mainly from the protection of regular employment and not from the protection of temporary employment.

6. Sector-specific regulation

Sectoral measurement of regulation started in the 1990s in the OECD²³ and has led to the development of indicators for various service sectors: for the network industries, transport (air, rail and road), communication (post and telecoms), as well as for entry and conduct regulation in retail and professional business services.

In a development from evaluating the impact of regulation on standard measures of economic performance directly, recently the economic literature has focused on the impact of regulation on competition. The economic rationale behind this effort is that competitive pressure itself is expected to influence performance measures such as productivity²⁴, innovation²⁵ and employment²⁶ through static and dynamic efficiency gains accruing from a reduction in mark-ups and an increase in allocative efficiency²⁷. This evidence has led to growing research interest in the construction of useful competitive measures to monitor the sector-specific competition performance and compare it to the regulatory environment²⁸. The focus of this literature review is on quantifying the extent to which anti-competitive regulation²⁹ in certain services sector, as opposed to regulations in the public

²³ See OECD (2008) for review.

²⁴ See Nickell (1996).

²⁵ See Ahn (2002), Aghion et al (2005), Nicoletti et al (2001), Bassanini and Ernst (2002) and Jaumotte and Pain (2005).

²⁶ See Nicoletti et al (2001), Nicoletti and Scarpetta (2005) and Fiori et al (2007).

²⁷ Arnold et al (2008) show that anti-competitive regulations exert a negative impact on allocative efficiency especially in services industry and ICT-using sectors.

²⁸ See Høj et al (2007) and Molnar and Bottini (2008).

²⁹ See Conway and Nicoletti (2006).

interest (e.g. by addressing market failures) or intended to assure quality of services for consumers³⁰, has an impact on performance.

While there are numerous studies calculating the intensity of sector-specific competition³¹, only a few have tried to establish a link to the regulatory environment and competition. Høj et al (2007) and Molnar and Bottini (2008) estimated the sector-specific mark-ups of OECD countries and showed correlation statistics and simple econometric results for their relation to OECD regulation indicators.

Despite action taken to liberalise retail trade services considerable differences in regulations across OECD countries persist in this service industry. Anti-competitive regulation includes zoning-laws (intended to mitigate deleterious effects that large peripheral outlets can have on small shops in town centres) and labour regulations. There is evidence suggesting that both types of regulation can have adverse effects on the overall degree of competition in retail markets³².

Overall regression analyses carried out by Høj et al (2007) confirm that regulations (measured by PMR Indicators) that are less conducive to competition are positively and significantly correlated with mark-ups across countries, especially in the services sector. This correlation is strongest for the sub-components “barriers to trade and investments”, “entry barriers” and “economic regulation”. As the PMR index (see OECD 2005b) is an economy-wide measure of regulation this analysis was also carried out with a different set of regulation indicators, time averages of ECTR indicators (Energy, Transport and Communications) as well as sector-specific regulation indicators for trade, financial services and business services, confirming the results. Improving the measures for competitive pressures used, Molnar and Bottini (2008) carried out an additional analysis for the services sector. Their results also point to a high correlation between mark-ups in professional services and the OECD PMR indicators.

6.1. Professional services

Evidence from these studies suggests that the professional services sector, which is one of the most intensely regulated service sectors, shows the lowest degree of competition among market services. Whereas part of this might be attributable to their inherent characteristics, such as a high degree of informational asymmetry between service providers and their customers, restrictive market entry-regulation requirements for national occupational qualifications for licensing, certification or registration foster the non-tradability of these services and therefore decrease competitive pressures³³.

Critical examination of the regulation of professional services emerged during the 1990s in the context of law and economics³⁴. Empirical studies since have shown little evidence of a positive effect of regulation on consumer welfare³⁵. Nicoletti et al (2000) achieved the quantification of the degree of restrictiveness (in the sense of anti-competitiveness) by consolidating regulations on competitiveness (and also employment protection) into appropriate index measures, first for transport, retail and telecommunications. Nguyen-Hong (2000) extended this approach by categorising restrictive barriers to trade in engineering, architectural, accountancy and legal services and consolidating these into country indices. Regulation indices for professional services (above mentioned plus notarial and retail pharmacy services) developed by IHS³⁶ for the European

³⁰ See Ogus (2000) for a discussion of self-regulation.

³¹ See for example Przybyla and Roma (2005), Badinger and Breuss (2005,2006), Molnar (2010) or Borg (2009).

³² Høj et al (2007).

³³ Compare Høj et al (2007) and Molnar and Bottini (2008).

³⁴ See Faure et al (1993), Gelking (1996), Stephen and Love(2000) and Ogus (2000).

³⁵ See Conway and Nicoletti (2006), OFT (2001) regarding professional services.

³⁶ See Paterson, Fink, Ogus et al (2003).

Commission³⁷ were used to examine economic outcomes in terms of business volumes, employment and number of firms. Indications of a negative association between the degree of regulation and productivity were found for legal, accounting and technical services.

The conclusion is that removing barriers to trade and for foreign direct investment, easing market access along a number of dimensions including nationality and residency requirements, easing zoning laws and limiting the degree of self-regulation by professional associations, would strengthen the competitive environment in European service sectors.

6.2. Financial sector

There are three major objectives of regulation and supervision (Brunnermeier et al, 2009; Goodhart et al, 1998): (i) to constrain the use of monopoly power, (ii) to protect smaller and less informed clients against failure or adverse behaviour of financial institutions, and (iii) to ensure systemic stability. While the first condition has been more commonly relevant in the case of utilities, ensuring fair and open competition and access to systems and information has been important in the financial sector. The second condition arises due to the losses caused by the failure of an individual financial institution to customers who are unable to assess the safety and the soundness of financial institutions. Accordingly, the need for prudential regulation and supervision arises due to the imperfect consumer information and the nature of the business, irrespective of systemic concerns. The case for systemic regulation, on the other hand, arises because social costs of the failure of a financial institution exceed the private costs and these costs are not internalized by the decision making of the firm, and that the social costs of market failure exceed both the private costs of failure and the costs of regulation. Systemic externalities involved in the failure of financial institutions which are not present in other industries make the third condition central in the case of regulation of banks and some key financial intermediaries.

The current global crisis revealed significant weaknesses in the components of the safety nets created to limit the externalities created by bank failures. Bailing out the financial institutions during the crisis together with the proposed regulatory changes, on the other hand, raised concerns over the resulting market structure and the implications for the competition in the finance sector (Beck et al 2010). While the debate over a better and different financial regulatory and supervisory framework continues, the implication is that there is a need to understand better the interactions between regulations, competition, performance and stability in the financial services industry.

This paper reviews the existing literature on competition and performance in the financial sector. The rest of the paper is organised as follows. Section 2 provides a brief review of the empirical work on the financial regulatory framework and banking performance and stability in general. Section 3 focuses on the subset of this literature that explicitly analyses the competition and performance and stability link in the financial sector. Section 4 discusses the consequences of the cross-border banking and foreign bank entry for the structure, competitiveness and stability in the target markets. Section 5 provides the conclusions together with a brief review of a new study to be undertaken.

Financial regulations and banking performance

Extensive financial reform and liberalization programs aimed at increasing competition and hence performance in banking sectors together with increased consolidation and presence of multinational banks have characterized the financial sectors of both developing and developed countries in recent years. While it is generally assumed that a liberalised regulatory framework will result in a more competitive and efficient banking sector and hence promote economic growth and welfare, the

³⁷ Indices originally calculated for EU-15 were later extended to include EU-27 countries.

implications for the market stability have remained the main concern of the regulators. In the case of various emerging markets in particular financial sector liberalizations undertaken in adverse macro-economic conditions and underdeveloped legal and regulatory frameworks have been followed by financial crisis. In more recent years, financial innovations and across-business lines consolidation which created complex international conglomerates, and the cross-border financial sector dependencies have complicated the design of the regulatory framework (Claessens, 2006; Beck, 2008).

One of the most prominent cross-country contributions on the relationship between financial supervision and bank performance and stability is provided by Barth et al (2004). By covering 107 countries and employing a wide range of regulatory and supervisory indicators, the study fails to find a strong relationship between the official supervisory indicators and bank performance and stability, except for one indicator, the diversification index. The findings suggest that policies that force accurate information disclosure, empower private-sector corporate control of banks, and foster incentives for private agents to exert corporate control work best to promote bank development, performance and stability. The authors hence advise against government policies that rely excessively on direct government supervision and regulation of bank activities. Beck et al (2006), on the other hand, undertake an empirical analysis of the impact of national bank concentration, bank regulations, and banking fragility. Using data on 69 countries from 1980 and 1997, the study finds that systemic banking crises are less likely in economies with concentrated banking systems supporting concentration-stability view. The results also show that fewer regulatory restrictions reduce banking system fragility while countries with institutions promoting competition have a lower probability of experiencing a systemic crisis implying that competition promotes stability. The authors, hence, note that concentration might be an inefficient measure of banking system competition.

Gonzalez (2005) argues that the theoretical link between banking regulatory restrictions and stability is not clear without controlling for bank risk taking incentives. Greater freedom for banks can lead to banking stability by providing opportunities for wider diversification or alternatively undermine stability by providing opportunities for assuming higher risk. Using bank level data in 36 countries over 1995-1999, the empirical findings show that regulatory restrictions have a different effect on bank risk taking depending on bank charter value. It is found that weaker regulatory restrictions favor higher bank charter values and higher charter values of banks in countries with fewer regulatory restrictions provide incentives for banks to reduce risk. Banks in countries with stricter regulatory restrictions, however, have lower charter values that do not provide risk-reducing incentives. In contrast to Barth et al (2004), it is found that fewer regulatory restrictions are associated with greater bank risk-taking after controlling for the effect of regulatory restrictions on bank charter value and the effect of bank charter value on risk-taking.

In addition, recent contributions show that banks do respond to private governance mechanisms and hence point to the need for taking into account how a bank's ownership and management structure interact with legal and regulatory environment in developing policy conclusions. Caprio, et al (2007) document the ultimate owners of bank capital and the degree of voting rights and cash flow rights concentration for a cross-section of 48 countries and report that banks are generally not widely held, rather families or the state control banks. They find that larger cash flow rights by the controlling owner enhance bank valuations while weak shareholder protection laws lower bank valuations. Moreover, greater cash flow rights are found to be mitigating the negative impact of weak protection laws on valuations. Hence, the findings suggest that the ownership structure is an important mechanism for governing banks. Laeven and Levine (2009) study how corporate governance mechanisms interact with regulations in shaping bank risk taking using bank level data across 48 countries. They find that bank risk, measured by z-score, is higher in banks that have large

owners with high cash flow rights. More importantly, they show that the relationship between risk and capital regulations, deposit insurance policies, and activity restrictions depends on each bank's ownership structure in that the sign of the effect of regulation on risk changes with ownership concentration. In particular, stricter capital regulations and more stringent activity restrictions are associated with greater risk when the bank has a sufficiently powerful owner. In the case of widely held banks, however, stricter capital regulations have the opposite effect.

Some recent studies examine these issues in the context of the recent financial crisis. Ahrend et al (2009) examine the links between prudential regulation and competition and risk. The analysis shows that banks in countries with stronger prudential rules had been more stable and less severely affected by the financial crisis. Concerning the impact of stronger prudential policies on competition, the results fail to support the view that there is a trade-off between stability and competition. In particular the strength of the banking supervisor improves both stability and competition. The authors, however, note that in particular areas there are trade-offs: regulations concerning entry rules and ownership structures tend to weaken competition. Beltratti and Stulz (2009), on the other hand, analyze the role of both bank level and country level corporate governance and regulation in the recent global crisis in a cross country study. Using market measures of performance, they find that pre-crisis bank level financial indicators are more important in determining the crisis performance of banks than the governance and regulatory indicators. Specifically they find that banks with more pro-shareholder boards performed worse during the crisis. Concerning regulations it is found that stronger supervisory authority had a negative effect on performance while stronger bank oversight was associated with better performance.

Bank competition and performance and stability

The extant research on bank competition follows two approaches: structural and non-structural. Under the structural approach competitive conduct of the banks is inferred through the analysis of the market structure i.e., the number and size distribution of firms in a market and the entry conditions. According to the structure-conduct-performance (SCP) paradigm market structure determines the conduct, which, in turn, determines performance. As concentration in a market increases, firms with greater monopoly power can charge higher prices and hence profitability increases. According to the alternative efficient markets or relative efficiency (EM) paradigm, on the other hand, some firms earn superior profits because they are more efficient than other firms and greater efficiency results in higher market share. Although under both models, the relationship between market concentration and profits is positive, in the EM model market share (and concentration) is endogenously determined by the efficiency. Accordingly, the policy implications differ under both models: the SCP model calls for regulations and/or policies to control concentration while such measures are unnecessary under the EM model. Under the non-structural approach, on the other hand, competitive behaviour can exist in concentrated markets if existing firms are vulnerable to hit-and-run entry, i.e. when the markets are contestable. Then the implication is that there is no need for the governments to imply policies that will encourage greater market entry (Heffernan, 1996).

Empirical research on the competitive environment and bank performance has not reached conclusive results. Studies following the structural approach employ proxies for the structure of the market such as concentration ratios and test the link between these variables and various performance measures. Studies that follow the non-structural approach, however, assess the competitive conditions explicitly first. Berger and Hannan (1998) for the US banking market test the 'quiet life hypothesis' under which banks in concentrated markets take advantage of market power and incur higher costs. They find that banks in more concentrated markets have lower cost efficiency. Casu and Girardone (2006), on the other hand, employ both structural (concentration)

and non-structural (Panzar and Rosse (1987) statistics, or so-called “H-statistics”) measures for assessing competitive conditions in the EU banking markets in the aftermath of the introduction of the Single Banking License. The findings suggest the existence of monopolistic competition in the Single Market. Further analysis of the determinants of competition reveals that the degree of concentration is not necessarily related to the degree of competition. They also find little evidence that more efficient banking systems are more competitive. Hence, they conclude that the relationship between competition and efficiency is not a straight one. Koetter et al (2008) noting that competition and efficiency are closely intertwined in banking derive an efficiency adjusted Lerner index and for the US Banking between 1986 and 2005 show that market power increased because of banks’ efforts to improve both cost and profit efficiency supporting efficient structure rather than quiet life hypothesis.

The literature analyzing the evolution of competition in the European markets in response to the deregulation process have not reached conclusive answers either. De Guevara et al (2005), analyse the evolution of market power in the five EU countries’ banking systems over 1992-1999. They find that there is no increase in the degree of competition while there are substantial differences in market power across countries as measured by the Lerner index. Further analysis find that bank size, efficiency and default risk, and economic cycle are associated with market power while concentration and bank market share fail to be significant. In a more recent study, however, Carbo et al (2009) undertake a cross country comparisons of competition in 14 European banking markets over 1995-2001 employing alternative measures (Lerner index, Net Interest Margin, Return on Assets and H-statistics) and find conflicting results within and across countries and over time. Their results show that when bank-level cost efficiency and the share of non-traditional revenue sources, and country-level output growth and inflation are controlled for, European banks’ pricing power seems weaker than found otherwise or by using traditional competition indicators. Bolt and Humphrey (2009), in addition, by employing a frontier approach to the measurement of competition, show that there can be different levels of market power in different market segments. Specifically they find that greater level of competition in the activities that generate spread income and lower level of competition in the non-interest income generating activities. They note that the results are in agreement with the observed decline of the importance of the former and increase of the importance in the latter in the banking revenues.

A strand of this literature focuses on the implications of competition for stability. The theoretical literature on the relationship between competition and stability relationship in the financial sector fails to reach a conclusive answer. Under the traditional “competition-fragility” view, initiated by the seminal paper of Keeley (1990), more banking competition leads to fragility by reducing banks’ franchise values and by providing incentives for increasing default risk. More recent literature, however, showed that the theoretical relationship between competition policy and stability is a complex one and the widely argued trade-off between competition and stability may not hold (Allen and Gale, 2004; Carletti and Hartmann, 2002). Boyd and De Nicolo (2005) showed that through a loan market risk channel higher market power in the loan markets leads to higher loan rates charged to customers who in turn optimally increase their own risk of failure.

The empirical evidence on the competition and stability relationship is not clear either. While in some of the studies concentration levels are employed as a proxy for competition levels, more recent contributions note that market concentration and market competition are different concepts and hence have different impacts on stability (Beck and Levine, 2006 and Schaeck et al, 2009). In particular Schaeck, et al (2009) find that both competition, measured by Panzar and Rosse H-statistics and concentration, have independent effects on the timing and on the probability of systemic banking crises using data from 45 countries. They find that competition reduces the likelihood of a crisis and increases the time to crisis. Uhde and Heimeshoff (2009), on the other

hand, employ z-score and its components as measures of banking risk and find that concentration has a negative impact on financial stability in Europe supporting concentration-fragility view. They also note that the higher return volatility of larger banks in concentrated markets could be a likely reason for the negative impact of market concentration.

Similarly, Agoraki et al (2009), note the interactions between regulations and market power and bank risk taking. Analyzing the Central and Eastern European banking sectors over 1998–2005, they find that banks with market power, measured by Lerner Index, have lower credit risk and a lower probability of default. In addition, capital requirements reduce risk in general, but for banks with market power this impact weakens or can even be reversed. While, higher activity restrictions together with more market power reduce both credit risk and the risk of default, official supervisory power has only a direct impact on bank risk.

Berger et al (2009), on the other hand, argue that the ‘competition-fragility’ view and the alternative ‘competition-stability’ view need not yield opposing predictions on the competition and stability link. Using various measures of market structure and risk, and based on 23 developed countries over 1999–2005, they show that more market power is associated with riskier loan portfolios supporting the “competition-stability” view. At the same time, a positive relationship between market power, measured by Lerner index, and the Z-index, inverse of overall risk measure, is found, supporting the “competition-fragility” view. Hence it is argued that while market power in the loan market leads to riskier loan portfolios, overall bank risks need not increase if the banks take measures to protect their higher franchise values due to their market power, for instance by holding higher equity capital.

In a recent contribution Schaeck and Cihak (2010) assess the competition in banking with the Boone indicator which is based on the efficient structure hypothesis and measured as the strength of the relation between efficiency and performance. Using two datasets for Europe and the US the authors show that competition increases efficiency and that efficiency is the conduit through which competition improves bank soundness. With important policy implications, further analysis show that banks’ responses to competition are not homogenous and that soundness enhancing impact of competition is stronger for sound banks rather than for weak banks.

Ensuring a competitive and sound financial system is crucial due to its implications for economic growth and efficiency. The interactions between market power, performance and stability however complicate the design of an effective financial regulatory framework that promotes competition and efficiency while maintaining stability. The existing theoretical and empirical literature on the link between competition and performance and soundness and the role of regulations in promoting competitive and sound financial systems has failed to reach unambiguous results.

While there seems to be evidence that concentration is not a proper measure of competition, there is no consensus on how best to measure competition in the finance industry. Employing different methodologies the studies that assess the evolution of competition in the European financial markets reach conflicting answers. Hence, further research that will simultaneously employ alternative measures of competition is necessary. Besides, competition should also be measured at segments of the financial markets: for instance interest earning activities vs. non-interest earning activities. Determinants of competition should also be analysed more explicitly. In particular, the relationship between efficiency and market power has not been clearly established yet. Likewise, concerning the link between stability and competition the existing research has yet to reach conclusive findings. In addition to the irregularities in the measurement of competition as mentioned above, there are irregularities in the measures of stability. While some studies employ systemic crisis episodes as market soundness measures, others employ market or accounting based

measures of bank risk. Corporate governance structures and cross-border financial links also complicate the relationships between regulations, competition and bank risk taking.

7. Conclusions

Research on the links between product market regulation and performance at industry level has been traditionally scarce mainly due to the lack of suitable data. Over the last years the development by the OECD of indicators on anti-competitive regulation for key non-manufacturing sectors, such as utilities, transport and communications, has prompted a surge on empirical research analysing the impacts of regulation on economic performance in those sectors. More recently the focus has widened to analyse the indirect impact that regulation of those highly regulated services has on other sectors of the economy, using an approach that combines product market/regulation indices with input-output data³⁸.

Despite initial evidence suggesting that the impact of regulation is likely to be higher in those industries that use more intensively intermediate inputs from highly regulated services sectors, the transmission channels remain unclear and methodological issues remain a challenge. The development of alternative indicators on the burden of regulation of services sectors (within INDICSER) should provide us with additional tools that allows us to understand the forces driving the observed links between regulation and economic outcomes.

The effects of regulation in specific sectors such as professional services and retail trade may also have a considerable “knock-on” effect in other sectors. Input-Output tables show, for example that professional services are delivered as intermediary input to a wide range of manufacturing, utility and other service industries. A similar approach than the one followed by the OECD may offer extended scope for evaluating the economic effects of regulation in order to guide policy. A causal study in the course of the SERVICEGAP project isolating the economic impact on the professional of (updated) anti-competitive regulation indices from other factors would enable stronger policy positions to be formulated.

Further research on the link between regulation and competition should consider recently developed indicators that are better capable of mapping competition within a sector, such as profit elasticity, as suggested by Boone et al (2007). Furthermore, establishing causal links between regulation and competition should also take into account other factors that might influence mark-ups, such as human capital employed in a sector/firm, the degree of innovation of a sector/firm as well as different degrees of productivity across sectors/firms. These might explain part of higher mark-ups in some sectors independently of the degree of regulation.

We have seen that there are interactions between regulations, market power, performance and stability that complicate the design of financial sector regulation. While the early literature has ignored the interactions between the regulations and the role of the market structure and market power, the recent literature has focused, in additions to these interactions, on the role of institutional and corporate governance structures and cross-border financial links in determining bank risk taking. In view of the new mechanisms and channels through which market structure can affect stability as revealed in the current crisis, the existing evidence on the interactions between regulations, competition, and stability in the financial services industry needs to be re-assessed.

Labour regulation is by nature economy-wide but recent research (Bassanini et al, 2009) has investigated whether employment protection has particular adverse effects in industries with high labour redundancy rates such as manufacturing. This research angle could also potentially be applied to the service sector. This said, we do now have a long time-varying indicator of EPL, and it seems that it would be possible to use it to interact with service and non-service industries as Bassanini et

³⁸ See Conway and Nicoletti (2006).

al (2009) do to improve estimates of the impact of EPL on labour productivity in the services. The lack of time variation has traditionally been highlighted in the literature as major constraint when evaluating the extent to which changes in labour market institutions explain changes in labour market outcomes (Nickel et al, 2005). This paper has discussed advances that need to be made both in regard to developing indicators of labour regulation (INDICSER), and applying these to explain services productivity. Despite the advances in the development of new indicators of labour market regulations none of the indicators apply particularly to services. To link with services productivity we will have to make use of the fact that labour regulation, and particularly EPL may bear down less hard on services given that services have fewer layoffs/redundancies. Given this path forward, experiments need to be made with different dependent variables, including total factor productivity, speed of employment adjustment, and measures of innovation and entrepreneurship.

In view of the literature on financial regulation reviewed here and the new mechanisms and channels through which market structure affects stability as revealed in the current financial crisis, we propose to study the interactions between market power and performance and stability in the context of Central and Eastern European banking markets. Two factors motivate the choice of these countries as a study sample. First, as uncovered in the preceding review, there are only a few studies that focus on these economies. Second, the varying financial reform experiences, in terms of the starting conditions and the speed, of these countries will allow an analysis of the dynamic relationship between the evolution of market competition and performance in response to the changing financial regulatory framework.

The analysis by employing alternative measures will first assess the evolution of market concentration and competition in these markets. Next the relationship between efficiency performance and stability and market competition will be analysed. The performance will be measured with the application of the frontier efficiency methods. The analysis will take into account the impact of the regulatory framework together with bank-level ownership controls. Transition index of EBRD and its sub-indices related to the regulatory changes in the financial services industry (index of banking sector reforms, index of non-banking financial institutions reforms and index of competition policy reforms) will be used to control for the regulatory environment. Bank level financial data will be accessed through Bureau van Dyke's Bankscope data base. The time frame will be organised such that the period of the current financial crisis will also be examined.

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